**Pitzer Cluster Reference**

**General**

* If not on campus wifi, you must use Berkeley VPN (Global Protect)
* “$” indicates that the following line can be typed directly into the command terminal
* “[ ]” indicates something to fill in based on what you want
* “\*” after some format will return all files that follow the format
  + Ex. “name\*.txt” will return files named “name1.txt”, “name\_extra.txt”, “name.txt”, “namesssss.txt”, etc.
  + Handy for opening or deleting multiple files that follow the same naming scheme
* “{x1..x2}”
  + Brace expansion: {x..y[..incr]}
  + Array from x1 to x2
  + Example use: $ rm -r {1..10} will remove folders numbered from 1 to 10
* Recommended software: Visual Studio Code (no plug-ins necessary for anything here)

**ssh tunneling (Bash) commands**

* $ ssh [username]@pitzer.cchem.berkeley.edu
  + Password will not “show up” as you type it
* $ clear
  + Clear screen (you can still scroll up to see history)
* $ ls
  + Show all files and subdirectories within working directory (current folder)
* $ cd [directory]
  + Change into a (sub)directory
  + “../” Allows to go “up” one directory level
  + “$cd [level 1]/[level 2]/[level 3]” can be used to go multiple directory levels
  + “$ cd” (no directory name) will take you to your home directory
* $ cp [filename] ./[new filename]
  + Copy file in cwd to new location/filename
  + Will not copy any folders
* $ mkdir [foldername]
  + Make a subdirectory within the working directory
* $ rm [filename]
  + Delete file
  + “-r” tag can be used to delete whole folders
* $ rmdir [foldername]
  + Delete (empty) folder
* $ mv [from] [to]
  + Move and/or rename single file or folder
* $ rename [from] [to] [filename]
  + Batch rename
* $ vi [filename]
  + Edit file (see “vi commands” for more)
  + If a foldername is used, folder with the name of its contents will display
* $ gcc [c code].c -o [exectutable].o -lm
  + Takes c code and compiles it into an executable computer code
* $ ./[executable].o
  + Run computer code in terminal
  + “ctrl + c” to stop
* $ qstat
  + See all codes that are currently running
* $ qsub [submit].sh
  + Submits job
  + “-N [jobname]” will allow you to create a custom name for the job
* $ qdel [submit].sh
  + Deletes job
  + Can also use $qdel [jobname] if jobnames are unique

**sftp commands**

* $ sftp [username]@pitzer.cchem.berkeley.edu
  + Password will not “show up” as you type it
  + Local working directory will be whichever directory you are in when executing above line
* $ ls
  + Show all files and subdirectories within working directory (current folder) on cluster
* $ lls
  + Show all files and subdirectories within working directory (current folder) on local computer
* $ cd
  + Same as ssh (show files in cwd on cluster)
* $ lcd
  + Change cwd on local
* $ mkdir
  + Create virtual subdirectory
* $ lmkdir
  + Create local subdirectory
* $ rmdir
  + Delete virtual subdirectory
* $ get [virtual filename] [local foldername]
  + Pull files in current working directory (virtual) onto local working directory
  + “-r” tag can be used to get whole folders
* $ put [local filename] [virtual filename]
  + Push files from local working directory onto virtual working directory
  + “-r” tag can be used to put whole folders

**vi commands**

* $ vi [filename] (only while ssh)
  + Open file
* “j” or “down arrow”
  + Move down one line
* “k” or “up arrow”
  + Move up one line
* “l” or “right arrow”
  + Move right one space
* “h” or “left arrow”
  + Move left one space
* “ctrl + d”
  + Move down one “page”
* “ctrl + u”
  + Move up one “page”
* “i”
  + Enter “INSERT” mode (normal editing mode)
  + Press “Esc” to quit
* “R” (shift + r)
  + Enter “REPLACE” mode
  + Press “Esc” to quit
* “dd”
  + Delete current line
* “u”
  + Undo last change
* “/ {pattern}”
  + Find occurrences in file
  + “n” for next, “N” for previous
  + “:noh” to clear (no highlight)
* “:wq”
  + Quit and save changes
* “:q!”
  + Quit without saving changes
* “:n”
  + See next file (if multiple files open)
* “:N” (: shift + n)
  + See previous file (if multiple files open)
* “:sp {filename}”
  + Split screen with other file
  + “ctrl + w”, “hjkl” to navigate around split windows
* “:[range]s/{find}/{replace}”
  + “:s/{find}/{replace}/g”: All occurrences on line
  + “:%s/{find}/{replace}/g”: All occurrences in file

**submit\_loop**

* submit\_loop.c , submit\_loop.o
  + Do not edit these, simply copy and paste into working directories
* submit\_loop\_in.txt
  + Open by “$ vi s\*t” as long as no other files follow that format
  + Format
    - Line 1: File to copy and edit for each run
    - Line 2: Files to copy for each run (but not edit)
    - “//Folder Number//” must follow this format and be consecutive integers
    - “[Line number]; [Insert text]” Applies only to file in Line 1
    - “//End!//” Needed at the end

**Microsoft Powershell**

* $ dir | rename-item -NewName {$\_.name -replace "{old}","{new}"}
  + Rename all items in cwd that contain pattern {old} with {new}